REMARKS

In response to the Office Action dated March 13, 2006, Applicant has amended the application as above. No new matter has been added by the amendments as discussed below. Applicant respectively requests for the entry of the amendments and reconsideration of the application in view of the amendments and remarks set forth below.

Discussion of Claim Amendments

Claims 1, 2, 3, 4 and 6 have been amended. Claims 1, 2, 4 and 6 have been amended to more clearly describe the present invention without adding any new matter. Further, Claims 1, 2, 4 and 6 have been amended to possess proper antecedent basis. Claims 7-9 have been added within the disclosure of the detailed description of the invention and are supported by the original disclosure. Upon entry of the amendments, Claims 1 to 9 are pending in the application. Thus, no new matter has been added by the current amendments. Therefore, Applicant respectfully requests for the entry of the amendments.

Discussion of Claim Rejections Under 35 U.S.C.§112

Claims 1, 2, 4 and 6 were rejected under 35 U.S.C.§112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner stated that the limitation "the characteristic" recited in Claims 1 and 2 does not have sufficient antecedent basis. In order to overcome the Examiner's rejections, the limitation "the characteristic" has been amended to "a characteristic," as interpreted by the examiner.

Further, the Examiner stated that the limitation "low bit" recited in Claims 4 and 6 does not have sufficient antecedent basis. As interpreted by the Examiner, the limitation "low bit" represents "low bit rate." Thus, the limitation "low bit" recited in Claims 4 and 6 have been amended to "low bit rate" to have a proper antecedent basis.

Discussion of Claim Rejections Under 35 U.S.C.§102(b)

Claims 1 is rejected under 35 U.S.C.§102(b) as being anticipated by Benyassine *et al.* (U.S. Patent No. 6,694,293).

The Examiner stated that Benyassine discloses preprocessing frames of audio data selected based on the classification of the invention. However, Benyassine does not teach or even suggest preprocessing frames of audio data selected based on the classification before the audio data is subject to the codec. The present invention is to preprocess frames of audio data selected based on data classification before the frame is processed by a predetermined codec having a variable coding rate, thereby improving the quality of the audio data after being encoded by the codec. By using the present invention, for example, when processing non-human voice by a codec, which is optimized for human voice and which tends to code other types of audio data in low bit rate, the quality of the coded audio data can be improved by preprocessing the non-human voice in a way that makes the other type of audio data to be coded in a higher bit rate. However, Benyassine does not disclose preprocessing audio data before the audio data is processed by the coder. Rather, Benyassine discloses processing frames of audio data in a codec. Further, although Benyassine discloses classifying frames as music or speech, such classification to decide

frames of the audio data for processing in the codec. Therefore, the classification of the present invention for preprocessing is different from that of Benyassine.

Discussion of Claim Rejections Under 35 U.S.C.§103(b)

Claims 4-6 are rejected under 35 U.S.C.§103(a) as being unpatentable over Benayssine in view of Malvar (U.S. Patent No. 6,029,126).

Regarding Claim 4, the Examiner stated that it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the amplitude of audio data in Benyassine in order to distinguish the music signal from noise and then correctly encode the frame at a higher bit rate, thus reducing encoding errors and increasing resolution once it is decoded. However, the present invention does not distinguish the music signal from noise for the encoding in the codec, but rather preprocesses the amplitude of audio data that is to be encoded in a low bit rate in a codec before processing the audio data in the codec. This is so that the preprocessed audio data are encoded in a higher bit rate by the codec. However, Benyassine is directed to correctly encoding the frame in the codec, which is incorrectly encoded due to the mistakes of the speech coding systems.

Further, the Examiner stated that Malvar discloses automatic gain control as one of the signal enhancement functions. However, Malvar does not disclose adjusting the amplitude of audio data that is to be encoded in a low bit rate in the codec such that the audio data is encoded in a bit rate higher than or equal to the low bit rate. That is, Malvar does not disclose preprocessing the audio data before the audio data is processed by the codec according to the present invention.

Regarding Claim 6, as explained above, neither Benyassine nor Malvar discloses any means for deciding an interval of audio data that is to be encoded in a low bit rate by a codec. They also do not disclose any means for adjusting the amplitude of audio data of the decided interval before the audio data is processed by the codec such that the audio data in the interval may be encoded in a bit rate higher than or equal to said low bit rate when processed by the codec data.

Claims 2 and 3 are rejected under 35 U.S.C.§103(a) as being unpatentable over Benyassine in view of Malvar and further in view of Davis (U.S. Patent No. 4,539,526).

Regarding Claim 2, the Examiner stated that Malvar discloses that signal enhancement functions are used to enhance a signal prior to processing by the codec, automatic gain control being one of those functions. The Examiner further stated that Davis discloses a system, which performs preemphasis on a signal prior to encoding or decoding, wherein preemphasis is based on a ratio of high frequency energy to low frequency energy. However, Malvar does not disclose performing AGC preprocessing of frames based on a characteristic of audio data before the audio data is processed by a predetermined codec. Rather, Marvar discloses automatic gain control as a part of codec function.

Also, as described in column 2, lines 50-54 of Davis, the preemphasis in Davis is to amplify the magnitude of select frequency components of an electrical signal for reducing noise. However, the present invention performs the AGC preprocessing of frames such that the AGC preprocessed frames are encoded in a higher bit rate rather than reducing noise from the frames.

New Claim 7 recites preprocessing a frame of data, which is to be determined as noise signal by a predetermined codec such that the preprocessed frame is not determined as noise signal by the codec.

New Claim 8 recites preprocessing audio data before the audio data is transmitted through a transmission channel and is then processed by a codec such that the audio data is processed in the codec in a higher bit rate from the bit rate without preprocessing.

New Claim 9 recites means for adjusting an amplitude of audio data such that the audio data is processed in a codec having variable coding rate in higher bit rate from the bit rate without the amplitude adjustment.

Benyassine, Malvar and Davis all fail to teach or suggest the above claimed element of new Claims 7-9.

CONCLUSION

For the above reasons, Applicant respectfully submits that the present invention should be granted since the cited references, whether taken individually or in combination, do not teach or suggest each and every feature of independent Claims 1, 2, 4 and 6-9.

Claims 7-9 have been added, thereby adding 3 new independent claims. Applicant believes that the additional independent claims require extra fees of $300.

If any fees, including extension of time fees or additional claims fees, are due as a result of this response, please charge Deposit Account No. 19-0513. This authorization is intended to act as a constructive petition for an extension of time, should an extension of time be needed as a result of this response. The Examiner is invited to telephone the undersigned if this would in any way advance the prosecution of this case.

Respectfully submitted,

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